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Pruning levels for Zante currant

by

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Länge des Anschnittes bei Zante currant

Zusammenfassung. — Vierzehnjährige Reben der Sorte Zante currant von durchschnittlicher Wuchskraft wurden in einem zweijährigen Versuch auf 60, 90, 120 oder 150 Augen geschnitten, um die optimale Knospenzahl beim Rebschnitt zu ermitteln.

Die Ergebnisse weisen darauf hin, daß bei dieser Rebsorte das Optimum bei 90—120 Augen liegt. Hierbei wurde die Qualität des nächstjährigen Schnittholzes nicht beeinflusst. Außerdem zeigte sich eine umgekehrte Beziehung zwischen der Zahl der Trauben und dem Zuckergehalt sowie zwischen dem Traubengewicht und der Anzahl der Trauben je Knospe.

Introduction

In the irrigation district around Mildura, Victoria, Australia, Zante currant (*Vitis vinifera* L.) grapevines are normally pruned to 30 two-bud spurs totalling 60 buds per vine. Trials in the district have shown that yield increases could be obtained by pruning to more buds (EL-ZEFTAWI and WESTE 1970, EL-ZEFTAWI 1971, CIRAMI and EL-ZEFTAWI 1973).

This paper reports a trial carried out over the two seasons 1970—71 and 1971—72 to establish the best pruning levels for pruning Zante currant.

Materials and Methods

The trial was begun in 1970 on fourteen-year-old furrow-irrigated vines of average vigour on a commercial property. They were planted 2.4 metres apart in rows 3.3 metres apart running south-east to north-west on a T-trellis with two wires 40 cm apart. Since 1967 they had been sprayed each season with gibberellic acid at 1 ppm + 2-(chloroethyl)-trimethyl ammonium chloride at 100 ppm as soon as capfall had finished. Single vine plots in a randomized block of 24 replications were pruned to four bud levels, 60, 90, 120 or 150, on two-bud spurs.

Determination of fresh and dried yield, average berry weight, sugar content as Brix, number of bunches, bunch weight, bunch : bud ratio, number of berries per bunch, undeveloped berries per cent and split berries per cent were made as already described (EL-ZEFTAWI 1971, EL-ZEFTAWI and WESTE 1972).

Results

Fig. 1 shows the effects of different pruning levels in the two seasons of the trial. 1970—71 season was less fruitful and of lower yield and with more split berries per cent than 1971—72.

In both seasons fresh yields were increased by pruning to 120 or 150 buds while pruning to 90 buds was inconsistent in its effect. Dried yields, however, increased only in 1972 by pruning to 90 to 150 buds. There were no significant differences in average berry weight between the different pruning levels in the first season, but pruning to 120 or 150 buds in the second reduced berry weight compared with

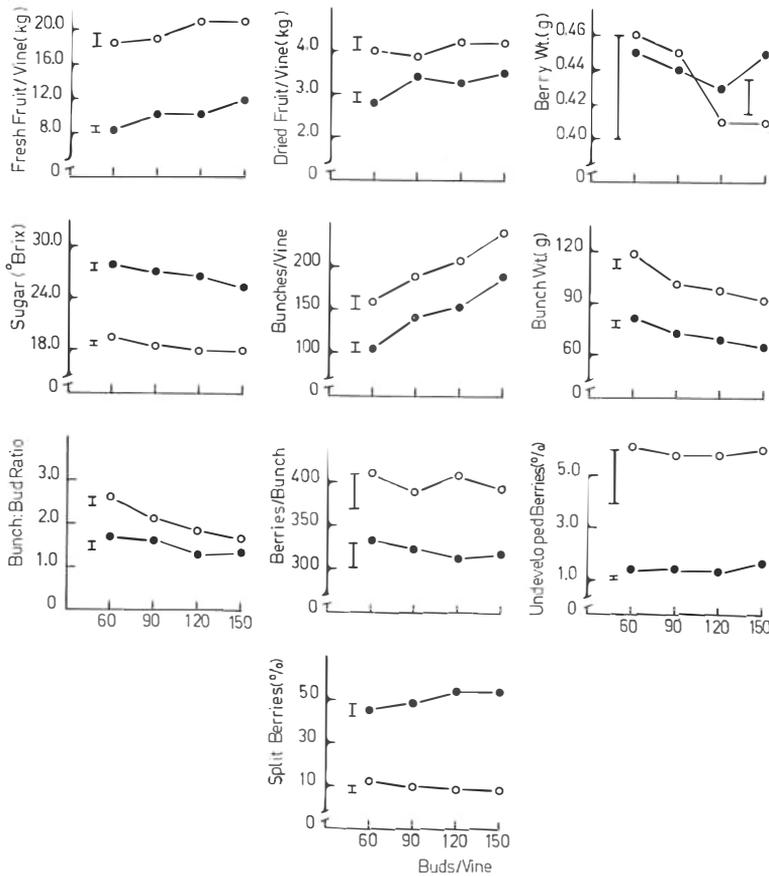


Fig. 1: Effects of different pruning levels in the two seasons 1970—71 and 1971—72 on fresh and dried fruit per vine, berry weight, sugar ($^{\circ}$ Brix), bunches per vine, bunch weight, bunch : bud ratio, berries per bunch, undeveloped berries per cent and split berries per cent.

Auswirkungen verschiedener Schnittstärken in den beiden Vegetationsperioden 1970—71 und 1971—72 auf Frisch- und Trockengewicht der Trauben je Rebe, Beerengewicht, Zucker ($^{\circ}$ Brix), Anzahl der Trauben je Rebe, Traubengewicht, Anzahl der Trauben je Knospe, Beeren je Traube, unentwickelte Beeren in Prozent und geplatzte Beeren in Prozent.

●—● 1970—71, ○—○ 1971—72. — I L.S.D. ($P = 0.05$).

pruning to 60 or 90 buds. Pruning to 60 buds gave the highest sugar percentage.

Bunch number increased but bunch weight and bunch : bud ratio (that is, fruitfulness of the vine) decreased with increasing number of buds. However, there were no significant differences in number of berries per bunch. Undeveloped berries per cent increased significantly only with the 150 bud treatment in 1970—71. Although split berries per cent increased with 120 or 150 buds in 1970—71 no such effect was apparent in 1971—72.

Discussion

It has already been shown that yield increases could be obtained by increasing the number of buds on a Zante currant vine in the Mildura area (EL-ZEFAWI and

WESTE 1970). Highest yields were related to an optimum number of buds, for example about 90 buds in combination of single and double spurs was suggested (EL-ZEFTAWI 1971) while with 14-bud canes 112 buds on eight was best (CIRAMI and EL-ZEFTAWI 1973).

In this trial yield increases were obtained by pruning to 90 to 150 buds per vine. Results show that there are inverse relationships between number of bunches and sugar content, bunch weight and bunch : bud ratio. All these effects were of larger magnitude in the second than in the first season. This is probably due to the ability of the vine to draw on its accumulated reserves over the years in the first season, while in the second season it was able to draw on one season's reserves only.

Although there was no effect on the number of berries per bunch, there was an increase in split berries in the first year and a decrease in the second year with increasing number of buds per vine. Seasonal differences in berry splitting are related to the amount of rain in the last three weeks in January (EL-ZEFTAWI and WESTE 1972). This was 10.2 mm in 1971 and 2.8 mm in 1972. The effect of pruning to different number of buds on split berries per cent could be attributed to the stage of ripening in each year (EL-ZEFTAWI and WESTE 1972). With increasing number of buds sugar content decreased in 1971 but increased in 1972, so that the berries were at different ripening stages when the rain fell.

On the basis of the final dried fruit yield per vine there were no differences between vines pruned to 90, 120 or 150 buds, however pruning to 150 buds is not advisable because it was difficult to obtain 75 strong spurs to be pruned to 150 in the second year. This is because increasing the number of buds per vine, while it increases the yield, reduces vine vigor (EL-ZEFTAWI and WESTE 1970), not by reducing the total volume of shoots produced but by reducing their length and diameter (ZAHAROVA and MUZYČENKO 1968).

A linear relation was found between number of canes and fresh fruit weight of sultana vines (ANTCLIFF 1965). Similarly SOLDATOV (1966), classifying Kismis Cernyj and Kismis Belyj vines into four groups according to their annual yielding capacity, found that yielding capacity was correlated with the number of buds left on a vine.

Reviewing the results of this trial as well as of previous trials (EL-ZEFTAWI and WESTE 1970, EL-ZEFTAWI 1971 and CIRAMI and EL-ZEFTAWI 1973) it is recommended that Zante currant vines of average vigor under Mildura conditions should be pruned from 90 to 120 buds on 2-bud spurs or on 14-bud canes.

Summary

Fourteen-year-old Zante currant vines of average vigor were pruned to 60, 90, 120 or 150 buds in a two-year trial to estimate the optimum number of buds as a pruning level.

The results suggest that 90 to 120 buds is the optimum number for pruning of Zante currant. This could be used without affecting the quality of the shoots produced for pruning in the following year. Results also have shown that there are inverse relationships between number of bunches and sugar content, bunch weight and bunch : bud ratio.

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